

1 STORAGE AND DISPENSING ALIQUOT PORTIONS OF
2 LIQUID EGG IN A WHOLESOME AND CONVENIENT MANNER
3 Specification

4 Field of the Invention

5 Storing liquid egg, and delivering it in aliquot portions to
6 the cook, for example for one, two or three egg omelets, while
7 maintaining the egg product in a wholesome and sanitary condition
8 from the storage to the omelette pan.

9 Background of the Invention

10 A restaurant customer who orders his eggs cooked in an
11 unmixed fashion such as sunnyside up, or over, expects and
12 receives a product in which the egg yolk and the white are
13 discrete and recognizable from one another. For these dishes the
14 cook breaks and cooks the eggs without disturbing them, except
15 perhaps for puncturing the yolks.

16 Depending on the type of restaurant, an order of scrambled
17 eggs or an omelette will also be produced by the cook from eggs
18 which he breaks and then stirs or whips. Restaurants and cafes
19 with relatively slow traffic in egg dishes do provide shell eggs
20 to the cook, who breaks them when he prepares every order.

21 There is another type of restaurant, in which egg dishes are
22 an active, even dominant part of the menu, and which rely heavily
23 on omelettes as a specialty and product leader. In such
24 operations, the cook must produce omelettes at a considerable

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1 rate, so there is no time for him to break eggs. For such
2 operations deshelled whole eggs are provided in a liquid, mixed
3 and stabilized form. This product is sometimes called "Egg
4 Wash". It is the whole egg, mixed and stabilized, and supplied
5 in a plastic bag. This bag is often confined in a cardboard box,
6 and can conveniently be stored in a refrigerator located at the
7 cook's omelette stand.

8 The advantages of this form of egg are evident. It arrives
9 at the cook's stand free from the biological hazards of handling
10 a whole unshelled egg. It can readily be portioned to suit an
11 order for any number of eggs per order. Even more importantly,
12 it is the same product as would have been produced from an egg
13 that was shelled at the stand. The customer will not know the
14 difference.

15 However advantageous the above is, and it is in widespread
16 use, restaurant proprietors and public health inspectors are on
17 nearly continuous alert because of the way the egg product is
18 actually dispensed. In practice there is a cold-table insert for
19 the egg product. The cook fills the insert from the bag and
20 returns the bag to the refrigerator. Then he puts a ladle,
21 usually one which conforms to a "one-egg" size, into the filled
22 insert. When he makes the omelette, he doles out an amount
23 respective to a number of eggs, one at a time, puts it in the
24 pan, and returns the ladle to the insert when it is kept until

1 the next order.

2 Notice that the egg product in the insert will be exposed to
3 the air for an undetermined length of time depending on activity,
4 exposed to ambient temperature, subjected to repeated return of a
5 ladle into the egg product, and subject to things passing into
6 it, which they do. The temperature and sanitary condition of the
7 egg product are of continuing and considerable importance. After
8 the egg product has left the bag, its condition is no longer
9 certain. Also, it becomes exposed to the question about sanitary
10 condition of the insert.

11 These uncertainties plague the operators of restaurants with
12 heavy egg traffic, and often result in negative grades from
13 inspectors.

14 It is an object of this invention to provide liquid egg
15 product in a strictly-sanitary condition up to the moment it is
16 placed in the pan.

17 It is another object of this invention to provide a delivery
18 system which can produce on demand egg product in desired aliquot
19 qualities.

20 It is yet another object of this invention to produce a
21 system that can readily be primed and sanitized, utilizing the
22 same equipment as is used to deliver egg product to the pan.

23 Brief Description of the Invention

24 A egg product delivery system according to this invention is

1 adapted for use with a packaged and refrigerated supply of liquid
2 egg product. It is sometimes referred to herein as a "bag". A
3 tubing sometimes called an umbilical cord, is connected to the
4 bag to remove liquid egg from the bag.

5 A peristaltic pump withdraws the product from the bag,
6 delivering a known volume of the product per pulse, part of
7 revolution, or multiple revolutions. A control for this pump
8 causes the desired action, and thereby the extraction from the
9 bag and movement of the desired amount of egg product to the pan.

10 A delivery hose from the pump extends into an insert
11 customarily used instead to hold egg product to be ladled out,
12 where the hose outlet end is available for the cook to direct the
13 output to a pan.

14 According to a preferred but optional feature of this
15 invention, the outlet end of the hose is attached to a lid which
16 removably covers the insert so as to protect the insert from
17 dropped items, and to keep the hose end in a cooled region.

18 According to still another preferred but optional feature of
19 this invention, a leg or legs is fixed to the bottom of the lid
20 so that the lid can be laid aside, but with the hose end held
21 away from surrounding surfaces. Also, the legs can be arranged
22 so that a pan can be slid under the lid to receive the liquid
23 egg. Then the cord need not handle the lid at all.

24 According to yet another preferred but optional feature of

1 the invention a control for the pump is also provided with a
2 "run" setting, by means of which a sanitizing solution can be
3 sent through the system downstream from the umbilical cord to
4 clean the system, or a continuous longer flow of egg product.

5 The above and other features of this invention will be fully
6 understood from the following detailed description and the
7 accompanying drawings, in which:

8 Brief Description of the Drawings

9 Fig. 1 is a side view partly in schematic and partly in
10 cross-section view;

11 Fig. 2 is a schematic showing of a peristaltic pump in its
12 open condition;

13 Fig. 3 is a view of the pump of Fig. 2 in its operating
14 condition;

15 Fig. 4 is a fragmentary side view of a lid;

16 Fig. 5 is a top view of Fig. 4 with this invention;

17 Fig. 6 is a top view of an insert for use with this
18 invention; and

19 Fig. 7 is a right hand end view of the lid in Fig. 4.

20 Detailed Description of the Invention

21 While this system need not be contained principally in a
22 refrigerator or refrigerated work counter, it is an important
23 advantage that it can be. Accordingly a work counter 10 is shown
24 with a plurality of metal inserts 11,12, whose sides and bottoms

1 are refrigerated, usually by cold air, but occasionally with
2 chilled water. These will usually contain various ingredients of
3 omelettes. One of them, insert 11, associated with the liquid
4 egg product.

5 The refrigerated enclosure shown schematically by line 20
6 has a support 21 to hold a plastic bag 22 filled with liquid egg.
7 A tubing 23 sometimes called an umbilical cord leads from the bag
8 to a free end 24. It is usually a separate tubing attached to
9 the bag. The free end of tubing 23 is closed until it is
10 connected into the system by a coupler 26. An optional off-on
11 shut-off valve 25 may be provided to which tubing 23 can be
12 connected.

13 The term "peristaltic pump" is used herein to define a pump
14 which delivers liquid product in aliquot portions respective to a
15 pulsed action. A pulsed action means that there is no contact of
16 the product in the pump structure except for contact with the
17 tubing in which it is conveyed. For example it does not include
18 piston-cylinder types in which a piston directly contacts the
19 product.

20 This invention utilizes the advantageous roller-type
21 peristaltic pump. Other types exist which can be used that
22 utilize isolated valving techniques, but the roller type offers
23 significant advantages in the environment where these pumps will
24 be used, not the least of which is their capacity for convenient

1 and quick sanitizing.

2 A peristaltic pump 30 is connected to this outlet of the
3 shut-off valve or to the tubing from the bag. Its principal
4 characteristic is that the egg product does not come into contact
5 with any of the mechanism of the pump itself. Instead, as shown
6 in Figs. 2 and 3, the pump includes a length of springly flexible
7 pump tubing 31 that tends to be self-shaped retaining, but which
8 can be pinched closed. When a pinching force is removed, the
9 tubing will reopen to its full extent.

10 An arcuate race 32 backs up the tubing. A pair of rollers
11 33,34 are rotatably mounted at a center 35 for rotation parallel
12 to the race. For convenience these are called rollers, although
13 they could instead merely slide along the tubing. When in
14 contact with the tubing they pinch it closed. As they move along
15 the tubing they displace the egg product ahead of the pinch. The
16 volume delivered is thereby determined by the passage of the
17 rollers. In the illustration, the rollers are spaced apart by
18 180 degrees, so that when they are closed there is no free flow
19 through the pump.

20 Fig. 2 shows the rollers in an open position out of contact
21 with the tubing. The tubing can then be removed and replaced, or
22 if desired, cleaned out by a pressurized flow of sanitizing fluid
23 forced through it. Also, when the system is set up and empty, it
24 can be primed.

1 The rollers are rotated around center 35 by a motor 36. The
2 motor is powered by a source 37 enabled by control 40. This
3 control is provided with several switches 41, 42, 43 and 44. As
4 examples, switches 41, 42, and 43 are respective to running times
5 for delivery of one, two or three eggs.

6 Switch 44 can run the system independently of time. The cook
7 can then draw as much egg product as he desires, or can run
8 sanitizing solution through the system, or can run egg product to
9 prime the system when the system is empty.

10 Control 40 includes timers respective to the running times
11 needed for the respective deliveries. Alternatively, the pump
12 can be proportioned to deliver one egg per revolution.

13 Delivery hose 50 receives product from the pump and delivers
14 it to its delivery end 51. If desired, a nozzle or a spout can
15 be provided there. The hose passes through a notch 52 or hole in
16 the insert so that it is always in a cooled region.

17 The delivery hose downstream from the pump will always be
18 filled with egg product, but because the hose is chilled, the
19 product is safe. Further, it is shielded from the air- it is not
20 exposed until after it leaves the hose, as it would be if it
21 merely were poured into the insert.

22 The end of the delivery hose can also be provided with a
23 handle, but it is potentially advantageous both to cover the hose
24 end and the insert to keep them clean and cold. For this purpose

1 a removable lid 55 can be laid on the top of the insert, with the
2 hose end attached to its underside. Then a handle 56 can be
3 attached to the top of the lid for convenient manipulation.

4 So that lid and hose can be set down without contaminating
5 the hose, a leg 57 or legs project from the bottom of the lid.
6 These can enter the insert when the lid is on, but as shown in
7 Fig. 4, they will hold the hose end up above the work surface. A
8 notch 58 in the lid will pass the hose in the position of Fig. 4.
9 As a further advantage, the leg or legs can be long enough to
10 support the lid and the delivering end high enough above the work
11 table that a pan can be shoved under neath them. Then the cook
12 need not hold the lid or the pan while egg is discharged into the
13 pan.

14 The delivery hose will be equipped with sufficient length
15 that it can be pulled out as desired, and returned to the
16 enclosure.

17 This invention thereby provides a sanitary, reliable and
18 convenient system to deliver egg product directly to the cooking
19 pan in a desired amount.

20 This invention is not to be limited by the embodiments shown
21 in the drawings and described in the description, which are given
22 by way of example and not of limitation, but only in accordance
23 with the scope of the appended claims.